

Application Serial No.: 10/527,364
Amdt. dated March 16, 2007
Reply to Non-Final Office Action of September 20, 2006

LISTING OF CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Currently Amended) A method for forming plastic products, wherein in a mold cavity an amount of plastic is introduced in substantially plastic condition, whereupon at least one moveable ~~element to be called a~~ slide is moved at least partly into said the ~~respective~~ mold cavity while compressing and/or displacing at least a part of the plastic, wherein while the speed of movement of the ~~at least one~~ slide is sufficient to create so high ~~that~~ adiabatic and frictional heat ~~development occurs~~ in the plastic, such that the temperature

of the plastic rises to at least about the melting point of said plastic whereby said plastic becomes more liquid, at least its viscosity is decreased.

11. (Original) A method according to claim 10, wherein, prior to the introduction of the plastic into the mold cavity, the at least one slide is set at a passage distance, determined by the distance between one end, leading in the direction of movement, of the respective slide and an oppositely located wall part of the mold cavity, which distance is set on the basis of the melt of the plastic to be used in the mold cavity.

12. (Original) A method according to claim 11, wherein said passage distance is enlarged when using a plastic with a higher melt.

13. (Previously Presented) A method according to claim 10, wherein the or each slide is moved at a speed such that the movement of the respective slide takes place in, at most, approximately 20% of the total cycle time of a manufacturing cycle, determined by the time between the closure of the mold and the extraction of a ready product.

14. (Currently Amended) A method according to claim 13, wherein said movement of the or each slide is carried out in less than 10%, ~~in particular in less than 5%~~ and preferably in less than 3% of the total cycle time.

15. (Previously Presented) A method according to claim 10, wherein the closing pressure for the mold is smaller than the conventional injection molding apparatuses for the same products of the same material.

16. (Previously Presented) A method according to claim 10, wherein the material is introduced into the mold cavity with a filling pressure of less than 350 bars.

17. (Currently Amended) A method according to claim 10, wherein as material a plastic is introduced, ~~in particular a thermoplastic plastic~~, while the feed pressure and speed

are such that at least partial solidification of the plastic occurs during introduction of the plastic, while the or each slide is brought into the mold cavity such that therein adiabatic heat development takes place such that the plastic returns to a liquid condition, at least that its viscosity is reduced such that by moving the slide and, optionally, applying hold pressure, the respective mold cavity is completely filled.

18. (Original) A method according to claim 17, wherein in the or each mold cavity overflow spaces are provided which are filled with the plastic, wherein the parts filled in the overflow spaces are used as engaging elements for extracting a product formed in the respective mold cavity.

19. (Original) The use of an injection mold with at least one slide, while, during an injection molding cycle, the or each slide is moved in a mold cavity of the mold at a speed such that adiabatic heat development occurs in a mass introduced into the respective mold cavity.

20. (Canceled)

21. (New) A method for forming a plastic product comprising the steps of:
introducing a plastic in a substantially plastic condition into a mold cavity; and
raising the temperature of said plastic within said mold cavity with a movable slide, said movable slide creating heat within said mold cavity to raise said temperature by compressing said plastic within said mold cavity and by moving within said mold cavity at a speed sufficient to create frictional heat.

22. (New) A method for forming a plastic product comprising the steps of:
introducing plastic in a substantially plastic condition into an entirely closed mold cavity; and

compressing said plastic within said closed mold cavity with a moveable slide, wherein the speed of movement of the slide is sufficient to create adiabatic heat in the plastic, such that the plastic becomes more liquid.

23. (New) A method according to claim 22, wherein said plastic is introduced into said mold cavity with an injection device via an inflow opening of said mold cavity, and wherein said method further comprises the step of applying a hold pressure with said injection device to prevent plastic from exiting said inflow opening of said mold cavity during said compression step.

24. (New) A method according to claim 22, wherein, prior to the introduction of the plastic into the mold cavity, the at least one slide is set at a passage distance, determined by the distance between one end, leading in the direction of movement, of the respective slide and an oppositely located wall part of the mold cavity, which distance is set on the basis of the melt of the plastic to be used in the mold cavity.

25. (New) A method according to claim 24, wherein said passage distance is enlarged when using a plastic with a higher melt.

26. (New) A method according to claim 22, wherein the slide is moved at a speed whereby the time of movement is approximately 20% of the total cycle time of a manufacturing cycle, determined by the time between the closure of the mold and the extraction of a ready product.

27. (New) A method according to claim 26, wherein said movement of the slide is carried out in less than 3% of the total cycle time.

28. (New) A method according to claim 22, wherein the closing pressure for the mold is smaller than the conventional injection molding apparatuses for the same products of the same material.

29. (New) A method according to claim 22, wherein the material is introduced into the mold cavity with a filling pressure of less than 350 bars.

30. (New) A method according to claim 22, wherein the feed pressure and speed of the introduced plastic are such that at least partial solidification of the plastic occurs during introduction of the plastic, while the slide is brought into the mold cavity such that therein adiabatic heat development takes place such that the plastic returns to a liquid condition, at least that its viscosity is reduced such that by moving the slide and, optionally, applying hold pressure, the respective mold cavity is completely filled.

31. (New) A method according to claim 30, wherein in the mold cavity, overflow spaces are provided which are filled with the plastic, wherein the parts filled in the overflow spaces are used as engaging elements for extracting a product formed in the respective mold cavity.